



December 17, 2004

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Dr. Penn;

Following our meeting last week, I had hoped that you would have re-considered your planned approach to conducting the Kaelepulu TMDL. However, having received a briefing of your TMDL committee activities last night from Dr. Floyd McCoy at an ELRA meeting, it would appear that you are proceeding upon your chosen course. While I wish you well in this endeavor, I can not help but feel that your piece-meal approach to the problem is bound to yield less than adequate results.

By choosing to parcel out the \$150K funding in less-than-\$25K contract aliquots, you will avoid the problems associated with the bid process. I'm sure you feel that this gives your office more authority and tighter control over the research and study process. But this compartmental contracting method also runs the very real risk of producing a non-cohesive, disjointed, and therefore very weak research argument. I am assuming, of course, that you will follow all State contracting guidelines and that the contracts will all be to different individuals, who were not associated with your steering committee, and that each contract is for a different stand-alone deliverable. Integrating all of this into one cohesive TMDL document will definitely be a challenge.

I wish you well in your efforts. Kaelepulu is literally in my back yard and I have spent countless hours over the past two decades observing and measuring the system. If my efforts to date have brought the issue to a point where others can complete the TMDL study, then this frees me to address other issues within the ecosystem. While my business may suffer because of your avoidance, my code of ethics as an environmental professional demands that I assist your efforts with available data and information in my possession to assure that the study you conduct is both fair and reasonable. I have forwarded some relevant data to Dr. McCoy (on your TMDL committee) and you should feel free to use it to guide your studies. Based on my observations, I believe the following to be true concerning the pond.

1. The pond has been an estuary, probably for about 60 years, since the time of Enchanted Lake and channel "improvements" associated with urbanization.
2. The salinity of the pond averages about 17 ppt, but varies with depth, location, season, rainfall, and hydraulic connection to the ocean. Spatial and temporal variations are generally much finer than one would expect to discern from a monthly sampling program.
3. The stream mouth at Kailua Beach is a major factor controlling water quality in the system. The timing (or lack thereof) of the opening of the canal with the tide cycle is a major factor in determining how long the system remains open, how well it flushes, and the resultant stable level of the pond. This factor needs to be understood as it is one of the few variables that can be managed as a BMP.

4. The dead-end Kawainui tributary to Kaelepulu is likely highly polluted (data may be available from Park Engr. Study concerning dredging ~ 1990?). Low oxygen and high nutrient levels in this end of the canal lead to fish die-offs, low diversity, and generally odorous conditions. A renewed source of water from Kawainui would likely improve water quality in this dead stream.
5. The flood control bridge on the Kawainui tributary impedes waterflow, particularly during tidal exchange, and limits water quality above the bridge.
6. The silt berm at the pond exit to Kaelepulu Stream is the result of sedimentation from an adjacent downstream drainage canal. The "first flush" from the canal typically flows back to the pond until the sand bar at Kailua Beach is open.
7. The silt barrier at the pond exit to Kaelepulu Stream acts as a saltwater dam, preventing the free exchange of heavier saline waters between the stream and the pond. Removal of this berm by dredging is likely to dramatically improve circulation and water quality within the pond, but this process should be studied (and possibly modeled) prior to implementation.
8. The average depth of the body of the pond is about 9 feet. This is a decrease in depth from "two to three fathoms" or "12-feet" as judged by two individuals associated with the initial dredge and fill operation. The upper end of the pond, now a bird preserve, was once at least 6 feet deep (observation of long time resident), and is now either grassland or very shallow wetland. The bulk of this sediment likely originated from the development of "The Bluffs" during the late 1980's and early 1990's.
9. The sediment and flood control basin built by "The Bluffs" developer (LoneStar) has been effective at controlling erosion, but is sadly in need of maintenance.
10. Most of the present load of sediment to the pond originates on open or newly graded land to the west of the pond including several private developers and City lands. This load can be highly significant. See report of January '04 storm sampling effort by ELRA in report to DOH 319 grant. Matt Meyers of your office should have a copy.
11. The pond is a very effective settling basin, protecting Kailua Beach from about 90% of the sediment load entering the system.
12. The recent UH study funded by KBAC focusing on polychlorinated hydrocarbons was not well performed and the data presented should be carefully examined prior to drawing conclusions.
13. The majority of the trash and sediment load to the lake emanates from City owned storm drains. These drains have not been properly managed and the deltas built up at each outfall attests to the lack of maintenance of these systems. Installation of sediment drops and trash catchers at key points (each of the 4 open channels) would go a long way towards cleaning the pond and preventing pollution to Kailua Beach.
14. Despite the above problems the pond continues to support a surprisingly diverse population of fish and invertebrates. Endangered water fowl include at least 90 resident Coots, 22 Gallinules, and a highly variable number of foraging Stilts.

Good Luck

Bob Bourke  
Environmental Scientist  
Oceanit

